

48. (New) The method of claim 7 wherein the electrically conductive composition comprises a component selected from the group consisting of silver, carbon black, a doped metal oxide, and mixtures thereof.

Remarks

Claims 1-36 are pending in the present application. Claims 1-36 are rejected under 35 U.S.C. § 103(b).

Claims 4 and 26-36 are cancelled. Applicant reserves the right to present these claims in a continuing application.

New claims 37- 48 are presented for examination. New claim 37 corresponds to unamended claim 1 with the added step of “laminating a layer onto the substrate over the one or more gridlines, the layer including a plastic coating.” Independent claims 38 and 39 provide selections for the layer and coating. The antecedent basis for these claims are found on page 5, ll. 3-22 of the Specification. Independent claims 40 - 48 correspond to independent claims 2-3 and 7-17. No new matter is added by these new claims.

Claims 1 and 19 are amended to limit the substrate to substrates that “comprises plastics that are at least partially soluble in volatile organic compounds or softened by volatile organic compounds.” The antecedent basis for these amendments are found on page 3, ll. 11-15 of the Specification. It is a fundamental characteristic of the present invention that heating elements are deposited on plastic substrates that dissolve or are softened by volatile organic compounds. No new matter is added by these amendments.

1. Objection to the Abstract

The Abstract of the Disclosure is amended to comport with MPEP 608.01(b).

2. Rejection under 35 U.S.C. § 103(b)

Claims 1-36 are rejected under 35 U.S.C. § 103(b) as being unpatentable over Griese (4,774,397) in view of Oberle (6,194,692) and further in view of Krohn (6,716,893).

The Examiner states that Grise teaches “a heater 110 adhered to a flexible substrate 112 in a pattern having one or more gridlines 118.” The Examiner also characterizes Oberle as teaching “an electric heating sheet 10 and method of making the same”. The heating sheets of Oberle are cured by UV radiation. Krohn provides another UV curable composition.

Applicants have limited claims 1 and 19 to the deposition of heating elements on substrates that include a plastic that is dissolved or softened by volatile organic compounds. None of the references discloses a process in which such a substrate is utilized in combination with a photocurable composition that contains low levels of volatile organic compounds. The Applicants have recognized the utility of using photocurable compositions that contain small amounts of volatile organic compounds on such substrates. Typically, such compositions are viewed as valuable because of the environmental and health issues associated with volatile organic compounds. The applicants have recognized the advantage of such compositions for forming heating elements on inexpensive plastic substrates. It should be appreciated that it is the more expensive plastic substrates such as teflons that have reduced solubility in volatile organic compounds. Accordingly, independent claims 1 and 19 and their respective dependent claims (2-3, 5-18, and 20-25) are now patentable over Griese in view of Oberle and further in view of Krohn.


In addressing the Examiner’s rejection the Applicants also present new claims 37-48 for examination. The allowablity of these claims in part stems from the inclusion of the step of “laminating a layer onto the substrate over the one or more gridlines, the layer including a plastic coating.” None of the references cited by the Examiner disclose the formation of heating elements from a photocurable composition with low levels of volatile

organic compounds in combination with such a lamination step. Accordingly, claim 37 and its dependent claims 38-48 are patentable over Griese in view of Oberle and further in view of Krohn.

Applicants have made a genuine effort to respond to each of the Examiner's rejections in advancing the prosecution of this case. Applicants believe that all formal and substantive requirements for patentability have been met and that this case is in condition for allowance, which action is respectfully requested. If a telephone or video conference would help expedite allowance or resolve any additional questions, such a conference is invited at the Examiner's convenience.

A check in the amount of \$55.00 is enclosed to cover the one-month extension. Please charge any additional fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978 -- a duplicate of this paper is enclosed for that purpose.

Respectfully submitted,
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Date: 10/18/04

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